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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/673,971	09/29/2003	Paul F. Rodney	2000-IP-001878C1 (1391-25)	3957
30652	7590	01/31/2007	EXAMINER	
CONLEY ROSE, P.C. 5700 GRANITE PARKWAY, SUITE 330 PLANO, TX 75024			DANG, HUNG Q	
			ART UNIT	PAPER NUMBER
			2612	

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	01/31/2007	PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

## Office Action Summary

Application No.

10/673,971

Applicant(s)

RODNEY ET AL.

Examiner

Hung Q. Dang

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 29 September 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-31 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1,2,6-9,12-15 and 18-31 is/are rejected.
- 7) ☒ Claim(s) 3-5,10-11,16-17 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 29 September 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- ☐ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☒ Information Disclosure Statement(s) (PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_
- ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_
- ☐ Notice of Informal Patent Application
- ☐ Other: \_\_\_\_\_

## DETAILED ACTION

### *Double Patenting*

1. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

2. Claims 1, 2, 6-9, 12-15, 18, 21, 24 and 27 are rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claim 1 of U.S. Patent No. 6,781,520. Although the conflicting claims are not identical, they are not patentably distinct from each other because:

**Regarding claims 1, 2 and 27**, even though the wordings of claims 1, 2 and 27 of this application and claim 1 of U.S. Patent 6,781,520 are different, however, they claim the same method for receiving electromagnetic radiation from a signal transmitter in the presence of a source of electromagnetic noise in a borehole telemetry system as claimed in claim 1. Claims 1, 2 and 27 of this application uses the terms "signal sensor"

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and “directional noise sensor” and claim 1 of U.S. Patent 6,781,520 uses the terms “electromagnetic transducer” and “signal detector”. The two claims are functionally and structurally similar. Even though, claim 1 of U.S. Patent 6,781,520 does not specifically claim “**aligning**” the electromechanical transducer with the source of electromagnetic noise and “**aligning**” the signal detector with electromagnetic signal transmitter, however, one skilled in the art would recognize that in order to optimally sense or detect the noise or the transmitted signal, the noise sensor and the signal sensor should be directionally aligned with the noise and signal sources, respectively. Therefore, it would have been obvious to one skilled in the art at the time the invention was made to provide directionally aligning the noise and signal sensors with the noise and signal sources, respectively, disclosed by U.S. Patent 6,781,520.

**Claims 6-9, 12-15, 18, 21 and 24** are rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claim 1 of U.S. Patent No. 6,781,520. Although the conflicting claims are not identical, they are not patentably distinct from each other for the same reasons explained above.

2. Claims 1-4, 6-9, 12-15, 18-31 are rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claim 7 of U.S. Patent No. 6,657,597. Although the conflicting claims are not identical, they are not patentably distinct from each other because they both claim using magnetometer to detect transmitted signal and electromagnetic noise and using a noise canceller to cancel out the noise content of the transmitted signal; wherein a three-axis sensor is employed and

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aligning the signal/noise sensor by weighting and summing the output of the three-axis sensor.

3. Claims 6-17 are rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claim 11 of U.S. Patent No. 6,657,597. Although the conflicting claims are not identical, they are not patentably distinct from each other because they both claim using three magnetometers positioned orthogonally to teach other to detect transmitted signal and electromagnetic noise and using a noise canceller to cancel out the noise content of the transmitted signal; wherein a weighed adder is employed for combining the outputs of the three magnetometers to generate an output aligned with electromagnetic signal/noise transmitter(s), respectively.

### ***Claim Rejections - 35 USC § 102***

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

5. Claims 1, 2, 6-9, 12-15, 18, 19, 21, 22, 24, 25 and 27-31 are rejected under 35 U.S.C. 102(b) as being anticipated by Klein et al. U.S. Patent 4,980,682.

**Note:** Claim 1 claims “**aligning** a directional signal sensor...”, however, it does not clearly specify aligning which direction. Therefore, examiner broadly interprets this claimed limitation as below:

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**Regarding claim 1**, Klein et al. teaches a method for receiving electromagnetic radiation from a signal transmitter in the presence of a source of electromagnetic noise in a borehole telemetry system comprising (abstract):

aligning a directional signal sensor (Figure 1 and column 3, lines 30-44; signal sensors S1-S3 are aligned with the electromagnetic field generated by transmitter 27 to obtain the best possible signal-to-noise ratio) with a field produced by an electromagnetic signal transmitter in a borehole;

aligning a directional noise sensor (column 4, lines 1-25; the noise sensors here are **adjacently aligned** with the noise source) with a field produced by a source of electromagnetic noise; and

using an output from the noise sensor to remove noise from an output of the signal sensor (column 4 line 48 to column 5 line 44).

**Claims 6-9, 12-15, 18, 21, 24 and 27** are rejected for the same reasons as the rejection of claim 1.

**Regarding claims 19, 22 and 28**, the signal sensor disclosed by Klein et al. can also be a magnetometer (column 3, lines 37-44).

**Regarding claims 25 and 30**, the noise sensor disclosed by Klein et al. is also a magnetometer (column 3, lines 63-67).

**Claims 29 and 31** are rejected for the same reasons as stated in the rejection of claim 1. **Note:** an electromagnetic field inherently comprises an electric field. Therefore, the noise/signal sensors disclosed by Klein et al. are also electric field sensors.

**Regarding claim 2**, Klein et al. also teaches coupling the output of the signal sensor and the output of the noise sensor to the inputs of a noise cancellation system (the subtraction system) to produce a signal with reduced noise content (column 5, lines 22-43).

***Claim Rejections - 35 USC § 103***

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claims 20, 23 and 26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Klein et al. U.S. Patent 4,980,682.

**Regarding claims 20, 23 and 26**, examiner takes official notice that antenna-type electromagnetic sensors have been commonly used in detecting/sensing electromagnetic radiation. Therefore, by conventionality, it would have been obvious to one skilled in the art at the time the invention was made to alternatively provide an antenna-type sensor, instead of using a magnetometer, to the apparatus disclosed by Klein et al. to detect electromagnetic radiation. **Note:** an electromagnetic field inherently comprises an electric field.

***Allowable Subject Matter***

8. Claims 3-5, 10-11 and 16-17 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

**Regarding claims 3, 11 and 16**, the prior arts of record fail to teach or disclose a method of claim 1, which further comprising using a three-axis sensor as the **signal sensor** and aligning the signal sensor by weighting and summing the outputs of the three-axis sensor.

**Regarding claims 4, 10 and 17**, the prior arts of record fail to teach or disclose a method of claim 1, which further comprising using a three-axis sensor as the **noise sensor** and aligning the signal sensor by weighting and summing the outputs of the three-axis sensor.

**Regarding claim 5**, the prior arts of record fail to teach or disclose a method of claim 1, which further comprising using one three-axis sensor as both the signal sensor and the noise sensor, aligning the signal sensor with a field produced by a signal transmitter in a borehole by weighting and summing the outputs of the three-axis sensor, and aligning the noise sensor with a field produced by a noise source by weighting and summing the outputs of the three-axis sensor.

### **Conclusion**

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Hung Q. Dang whose telephone number is (571) 272-3069. The examiner can normally be reached on 9:30AM-6PM.




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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wendy Garber can be reached on (571) 272-7308. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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1/19/2007  
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